



# *Actes* Proceedings



## **Who is on board, and where to go? The orientations and stakeholder support of initiatives to face groundwater overexploitation in Morocco.**

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### **Introduction**

In Morocco, groundwater overexploitation has become one of the most pressing issues regarding the sustainability of water resources and their related uses. After decades of relative absence of the State in dealing with groundwater overuse, the administration shows an increasing eagerness to address this issue, with in particular the objective to set up groundwater management contracts for the major overexploited aquifers. The article analyses to what extent public policies designed to address the groundwater overexploitation challenge in Morocco are related to two important schools of thought at international level, and who are the stakeholders that support the attempted policies.

**Key words:** coalition – demand management - groundwater overexploitation - policy design

### **Schools of thought for groundwater management in developing countries**

The design and implementation of policies to face groundwater depletion need both a direction to be taken and a coalition of stakeholders to move in such direction. As in many developing countries, in Morocco many constraints make it difficult such design and implementation, e.g., the large number of farmers, their informal water uses, and the weak means and political power of organizations in charge of water resource management. With regards the direction to be taken, the diversity of groundwater management advocated policies and academic analyses in such context may be structured around two main schools of thought. The first one promotes a full control over water uses based on good governance principles, including Integrated Water Resource Management (IWRM) and user participation. This approach involves formally defined water uses, control based on measurement of farmers' water withdrawal and participation of farmers in the design of groundwater management. Such approach posits that, despite above-seen harsh conditions in developing countries, the latter principles remain appropriate and institutional solutions implemented in developed countries constitute a relevant pathway for developing ones (Braune and Wu, 2008). The second school of thought considers that, in the many regions of developing countries where thousands of informal small-scale farmers use groundwater, radically different actions are needed, in particular because it would be too costly in the short term to have a direct control over groundwater uses (Shah, 2009). According to this indirect approach, new initiatives are needed, apart from actions to increase water resources. These actions will generally be different from the usual tools of the IWRM

“toolbox” and may range from indirect control of groundwater use (e.g., by controlling the energy used for pumping) to provision of non-agricultural employment. The design and implementation of any policy will also need support from a coalition of stakeholders. Farmers’ cooperation will be needed for the implementation of the IWRM approach much more than for the indirect approach.

### **Large differences in policies and stakeholder involvement in Morocco**

The study assessed four regions where aquifers are overexploited in Morocco: the coastal Chaouia, Berrchid, the Saïss and the Souss. The study analyzed first the way public policies addressing groundwater overexploitation were designed and implemented. Second, it assessed to what extent farmers supported such policies and to what extent policy implementation led to impacts at farm level. The study was based on surveys of between 40 to 160 farmers in each case and interviews with stakeholders.

The coastal Chaouia is of limited importance for the two Catchment Management Agencies (CMAs) present in its area. There is no plan for setting up regulation of water uses, so the Department of Agriculture is left with trying to support farms’ adaptation to an already advanced “Tragedy of the Commons”. In the Souss region, a groundwater management multi-stakeholder agreement defined a list of actions aiming at acting on both the water resource and the water demand. This was made possible thanks to the coordination between public organizations, with a much more limited involvement of farmers’ organizations. Coordination between the local CMA, the Department of Agriculture and local antennas of the Ministry of Interior also enabled to launch the control of borehole drilling, with in particular the sizing of illegal drilling machines. Progressive formalization of groundwater uses is underway, since farmers need authorizations to deepen their boreholes. Metering of groundwater use for farmers above 15 ha is scheduled, since the latter represent 20% of all farms but 80% of water withdrawal. Groundwater management contracts are also planned but not yet implemented in the Berrchid and Saïss regions, partly due to the lack of political drive and limited involvement of other public organizations. In the Saïss, the CMA also organized the control of new boreholes drilling. In all cases, actions to increase water resources and to support the shift towards drip irrigation have been implemented or are planned, but will not be sufficient alone to restore the balance between water resources and uses.

Necessity of regulation by the State is acknowledged by approximately half of the interviewed farmers in the Souss and the Saïss regions, but by much fewer farmers in Berrechid and almost none in the Chaouia. In the Souss, half of interviewed farmers state that farmers help the police to spot illegal borehole drilling. The support is for state regulation, not self or community-based regulation. Indeed, in the studied cases, farmers generally prefer to adopt a “chasing” strategy, i.e., they invest to get sufficient groundwater to expand their irrigated farming system or to maintain it in case of decreasing groundwater levels. When not possible, they choose an “adaptive” strategy, i.e., they adapt their farming system to decreasing groundwater levels. While some farmers agree with regulation measures, when they refer to their own situations, they see these measures as a supplementary constraint to the existing technical and financial ones that have to be overcome to go on with “chasing” strategies.

## **Discussion - Conclusion**

In the Chaouia case, given the lack of involvement of the CMAs and the lack of farmers' support for regulation measures, indirect approaches were proposed in the policies of the Department of Agriculture, which anyway have not yet been implemented on the ground. Such choice is still implicit. By contrast, the Souss experience was clearly inspired by the IWRM school of thought, and aims at achieving some form of "adapted" IWRM, whereby paying more attention to large-scale farms may decrease implementation costs. In the Saïss and the Berrchid regions, there is not yet a coalition of stakeholders around an agreed specific direction.

The Souss case shows that the importance of the aquifer for the regional economy and the presence of a stakeholder able to catalyze a coalition were of key importance for the design of policies to face groundwater overexploitation. By contrast, as the Chaouia case testifies, the blatant existence of a groundwater crisis appeared as insufficient alone to trigger the implementation of such policies. In all cases, whether adaptive indirect pathways are to be supported and/or groundwater demand management to be set up, the design and implementation of policies will require sustained political drive and spaces where viewpoints may be integrated and coordination catalyzed between the different public organizations and farmer organizations.

## **References**

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